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THE KANSAS UREDINEAE.

BY ELAM BARTHOLOMEW, STOCKTON, KAN.

Read (by title) before the Academy December 30, 1898.

In preparing a state monograph on this interesting and widely distributed group of fungi—the rusts—the author has sought to bring together, in a small compass, all species known to occur in Kansas, and to indicate in popular language, as nearly as may be possible, their geographical distribution, frequency of occurrence, and destructive qualities to their several host plants, a list of which will be found at the end of the catalogue.

Since the publication of the list of seventy-five species compiled by Doctor Kellerman and Mr. Carleton in TRANS. KAN. ACAD. SCI., Vol. X, pp. 88-99, 1886, no effort has been made to catalogue the *Uredineae* of this state. During the twelve years that have elapsed since the publication of that list, by the assiduous labors of our collectors at various locations, the number of known species has more than doubled, and there are doubtless many yet to be added.

Of the 154 species and varieties here recorded Kansas is given as the type locality of twenty-six. In each case where the word "type" follows the date of collection it will be understood to indicate the date and locality of discovery.

All collections made in Rooks and Phillips counties, as indicated in the body of the catalogue, have been made by the author, unless otherwise specified. Where collections have been made by him in other counties, to prevent confusion, the abbreviation "Barth." will follow the locality and date of collection. In all other cases the collectors' names are given in full. All species here enumerated, with the exception of one or two, are represented in the author's herbarium and that of the State Agricultural College, at Manhattan.

At this time of critical readjustment and revised nomenclature, many obstacles must be met and overcome if one expects to make a very near approach to accuracy. Yet, after all his painstaking efforts, he is almost sure to awake to the somewhat annoying realization of the fact that what was an accepted scientific truth yesterday may be, in more ways than one, an error to-morrow! Some revision has been made in host nomenclature where collectors were obviously in error, but generally the revision in phanerogamic nomenclature, *of the latest pattern*, has not been followed.

The use of technical terms has been avoided as much as possible, with a view to making the catalogue of practical utility in a popular sense, yet scientific names have been adhered to strictly, that its scientific value might not be impaired.

Some stress has been put on the matter of citation of original publication, that the *age* in nomenclature may be readily seen and referred to by collectors and students generally, without necessity of referring to the many publications in which the original descriptions are found. Along this line it will be noted that not only the months are given in which the several species occur in the greatest abundance, but the *years* of collection are also given for the benefit of those who may follow this work in the future.

The various reasons should be obvious to all. The very near approach to each other, at least in gross form as well as more minutely, of *Puccinia helianthi*, Schw., *Puccinia tanaceti*, DC., and *Puccinia variolans*, Hark., has seemed to make it necessary, for the purposes of this catalogue, to separate these forms more along the line of host plants than on any well marked characters of the fungi themselves. Hence, all forms on *Helianthus* have been referred to *P. helianthi;* those on *Artemisia* and *Actinella* to *P. tanaceti;* those on *Aplopappus* to *P. variolans.*

Puccinia cirsii is dropped and all forms on *Cnicus* are referred to *P. suaveolens*, (Pers.) Wint.

Those on *Pyrrhopappus*, *Taraxacum* and *Troximon* are placed in *P. hieracii*, (Schum.) Mart. These changes are only in the line of establishing order where confusion has previously reigned. It seems, in a great measure, that each mycologist gets into a rut among these many-named species and follows it through all his work for years, as the examination of any herbarium in the country will usually show.

I wish to thank most sincerely the following persons for the many favors received from their hands, in the preparation of this catalogue, viz.: Dr. W. A. Kellerman, of Columbus, Ohio, for rare Kansas specimens furnished from his private herbarium for examination and comparison; Prof. J. C. Arthur, of Lafayette, Ind., for much valuable assistance in nomenclature and citation; Mr. George L. Clothier, of Manhattan, Kan., for his hearty and willing assistance in getting out the species in the herbarium of the agricultural college.

UROMYCES, Link.

1. **Uromyces appendiculatus,** (Pers.) Lev. II, III.
   Obs. I, p. 17.
   On Phaseolus diversifolius, Manhattan, Sept. 1884, W. A. Kellerman; Rooks county, Sept. 1889.
   On Phaseolus pauciflorus, Manhattan, Oct. 1884, W. A. Kellerman; Cloud county, Aug. 1885, M. A. Carleton.
   On Phaseolus sp., Wichita, Oct. 1889, Kellerman.
   On Phaseolus sp. cult., Rooks county, Aug. 1895.
   A common species in many parts of the state, though not very destructive to its several hosts.

2. **Uromyces aristidæ,** E. & E. III.
   1887: Jour. Mycol. p. 56.
   On Aristida basiramea, Manhattan, Dec. 1893, M. A. Carleton; Sept. 1892, J. B. S. Norton.
   This is a rare and inconspicuous species.

3. **Uromyces astragali,** (Opiz.) Sacc. II, III.
   Myc. Ven. Spec. p. 208.
   On Astragalus mollissimus, Rooks county, Aug. 1892, II; Aug. 1896, III; Seward county, Oct. 1892, M. A. Carleton; Ford county, summer of 1892, A. S. Hitchcock.
   A rare and inconspicuous species.

4. **Uromyces caladii,** (Schw.) Farl.
   1822: Syn. Fung. Carol. No. 480.
   On Arisaema dracontium, Chase county, May 1888, M. A. Carleton; Manhattan, June 30, 1892, C. H. Thompson.

5. **Uromyces euphorbiæ,** C. & P. II, III.
   XXX Rept. N. Y. State Mus. p. 90.
   On Euphorbia marginata, Rooks county, Aug. 1892, Seward county, July 1892, and Butler county, summer of 1892, A. S. Hitchcock; Republic county, July 1890, D. K. Thomas; Manhattan, Aug. 1893, W. A. Kellerman.
   On Euphorbia preslii, Manhattan, July 1886, W. A. Kellerman; July 1891, C. H. Thompson; Rooks county, Aug. 1893.
   On Euphorbia dentata, Manhattan, Oct. 1886, M. A. Carleton; June 1891, C. H. Thompson; Rooks county, Sept. 1887, II, June 1895, III.
   On Euphorbia obtusata, Rooks county, June 1889.

On Euphorbia petaloidea, Manhattan, July 1886, W. A. Kellerman.

On Euphorbia glyptosperma, Wallace county, July 1885, W. A. Kellerman; Manhattan, July 1891, C. H. Thompson.

On Euphorbia cordifolia, Rooks county, Oct. 1896.

On Euphorbia serpens, Manhattan, July 1886, W. A. Kellerman.

On Euphorbia maculata, Sept. 1887, Kellerman and Swingle.

On Euphorbia heterophylla, June 1891, C. H. Thompson; Johnson county, Aug. 1892, M. A. Carleton.

On Euphorbia geyeri, Manhattan, Aug. 1891, C. H. Thompson.

This common and widely distributed species usually does little damage to its many hosts, with perhaps the single exception of Euphorbia dentata, which it often destroys in large quantities.

6. **Uromyces fabæ,** (Pers.) Roem.

In Roem. N. Mag. III, p. 116.

On Vicia americana linearis, Manhattan, May 1888, Kellerman and Swingle; Cloud county, June 1888, M. A. Carleton; Osborne county, June 1891, Benj. Brown.

Rare and not very destructive.

7. **Uromyces genistæ-tinctoriæ,** (Pers.) Wint.

Rab. Krypt. Fl. I, 146.

On Colutea arborescens, Manhattan, Aug. 1887, Kellerman and Swingle; Oct. 1893, M. A. Carleton.

8. **Uromyces glycyrrhizæ,** (Rabh.) Mag. II, III.

1890: Deutsch. Bot. Gesell. B. 8, Heft 10.

On Glycyrrhiza lepidota, Wallace county, July 1885, W. A. Kellerman; Cloud county, June 1888, M. A. Carleton; Hamilton county, summer of 1892, A. S. Hitchcock; Rooks county, June 1891, II.

Rare, but quite destructive at times on individual plants.

9. **Uromyces graminicola,** Burrill, II, III.

1885: Parasitic Fungi of Illinois, p. 170.

On Panicum virgatum, Manhattan, Dec. 1888, Kellerman and Swingle (Kan. Fungi, No. 48); Rooks county, Aug. 1894, II, Oct. 1892, III; Osborne county, Mar. 1894, C. L. Shear; Franklin county, Dec. 1893, Grace Meeker; Reno county, Oct. 1889, W. A. Kellerman.

This widely distributed species, which appears to be abundant in all parts of the state, is noticeably destructive in many instances.

10. **Uromyces hedysari-paniculati,** (Schw.) Farl. II, III.

1822: Syn. Fung. Carol. No. 53. (A Puccinia).

On Desmodium acuminatum, Manhattan, Oct. 1884, Kellerman.

On Desmodium illinoense, Sept. 1893, Carleton and Norton.

On Desmodium sessilifolium, Aug. 1892, C. H. Thompson.

On Desmodium canescens, Pottawatomie county, Aug. 1893, Carleton.

On Desmodium sp., Douglas county, Sept. 1891, C. H. Thompson.

11. **Uromyces howei,** Peck.

XXIII Rept. N. Y. State Mus. p. 94.

On Asclepius cornuti, Manhattan, Oct. 1884, W. A. Kellerman.

A very rare species.

12. **Uromyces hyalinus,** Peck, II, III.

1878: Bot. Gazette, p. 34.

On Sophora sericea, Rooks county, June 1888 and June 1898; Ford county, June 1888, Kellerman and Swingle (in Kansas Fungi, No. 49);

Sherman county, June 1893, A. S. Hitchcock; Ford, Hamilton and Seward counties, summer of 1892, Hitchcock.

This species is common throughout the western part of the state, and usually renders abortive each plant attacked.

Issued in Fungi Columbiani, as Uromyces sophoræ, Pk. Critical examinations made from the large amount of material on hand convince me that the two names here given belong to the same species, and as the former has the priority I have given it the preference.

13. **Uromyces junci,** (Desm.) Tul. II, III.

Desm. Pl. Crypt. ed. 2d, No. 170.

On Juncus tenuis, Rooks county, Aug. 1892.

On Eleocharis palustris, Rooks county, Dec. 1894; Seward county, Oct. 1892, M. A. Carleton. (Ured. Am. No. 23.)

Rare and inconspicuous.

14. **Uromyces lespedezæ,** (Schw.) Peck, III.

1822: Syn. Fung. Carol. Nos. 497 and 498.

On Lespedeza capitata, Sept. 1884, Kellerman; Sept. 1892, J. B. S. Norton.

Rare and not destructive.

15. **Uromyces œnotheræ,** Burrill, II, III.

1884: Bot. Gazette, p. 187.

On Œnothera fremonti, Rooks county, Sept. 1887; Phillips county, Oct. 1895; Graham county, July 1885, Kellerman.

This species is rare even in the western part of the state, where the host is very abundant.

Doctor Kellerman's Graham county specimens were labeled in the State Agricultural College herbarium "Puccinia œnotheræ, Vise uredo;" but by a careful examination of his material I find it to be the true Uromyces œnotheræ in both II and III.

16. **Uromyces polygoni,** (Pers.) Fckl. II, III.

1801: Disp. Meth. Fung. p. 39. (Puccinia polygoni, Pers.)

On leaves of Polygonum aviculare, Manhattan, June 1889, Kellerman and Swingle; Cloud county, April 1888, Mitchell county, June 1888, Saline county, July 1892, and Hamilton county, Oct. 1892, all by M. A. Carleton; Sherman county, June 1892, A. S. Hitchcock.

On Polygonum ramosissimum, Dec. 1888, III, July 1889, II, Manhattan, Kellerman and Swingle; Riley county, July 1892, C. H. Thompson.

While rather common and widely distributed, this species is not very destructive to its hosts.

17. **Uromyces psoraleæ,** Peck, II, III.

1881: Bot. Gazette, p. 289.

On Psoralea tenuiflora, Rooks county, July 1885, Kellerman; June 25, 1892, and July 1895 (Barth.)

On Psoralea argophylla, Cloud county, June 1886, Carleton; Manhattan, July 1891, C. H. Thompson.

Rare and not destructive.

18. **Uromyces scirpi,** Burrill, III.

1885: Parasitic Fungi of Illinois, p. 168.

On Scirpus fluviatilis, Rooks county, Oct. 1888.

On Scirpus maritimus, Stafford county, Oct. 1892, M. A. Carleton.

Inconspicuous and very rare.

19. **Uromyces spermacosis,** (Schw.) Curt.
1867: Curt. Cat. Plants N. Carol. p. 123.
On Diodia teres, Cherokee county, July 13, 1887, Kellerman and Swingle.
A very rare species—collected but once in the state, so far as I am able to find a record of it.

20. **Uromyces sporoboli,** E. & E. II, III.
1893: Proc. Phil. Acad. Nat. Sci. p. 155.
On Sporobolus asper, Rooks county, Sept. 1892—type. Not found again on this host until Oct. 1898.
On Sporobolus vaginæflorus, Rooks county, Mch. 1892 (not identified at that time); Phillips county, Sept. 1896.
On Sporobolus sp., Manhattan, Dec. 1893, M. A. Carleton.
A rare species, doing but small damage to its hosts.

21. **Uromyces terebinthi,** (DC.) Wint. II, III.
Fl. Franc. VI, p. 71.
On leaves of Rhus toxicodendron, Rooks county, Sept. 1892 and Sept. 1896; Cloud county, Aug. 1885, M. A. Carleton.
Common to many parts of western Kansas, but scarcely affecting its host.

22. **Uromyces trifolii,** (A. & S.) Wint.
Die Pilze, I, p. 159.
On Trifolium pratense, Manhattan, Oct. 1892, C. H. Thompson.
This species, which is very common east of the Missouri river, is seldom found in Kansas.

23. **Uromyces zygadeni,** Peck, II, III.
1881: Bot. Gazette, p. 239.
On Zygadenus nuttallii, Manhattan, May 1886 and June 1884, W. A. Kellerman.
Rare and seldom noticed.

MELAMPSORA Cast.

24. **Melampsora farinosa,** (Pers.) Schroet.
1801: Syn. Meth. Fung. p. 217.
On Salix amygdaloides, Rooks county, Sept. 12, 1894, II, Oct. 31, 1892, III; Manhattan, Oct. 1885, II and III, M. A. Carleton; Pottawatomie county, Aug. 1893, Carleton.
On Salix nigra (?), Manhattan, Oct. 1887, Kellerman and Swingle; Aug. 1892, II, C. H. Thompson.
On Salix cordata, Rooks county, Aug. 1896, II.
On Salix longifolia, Manhattan, Oct. 1893, II, Lora Waters.
This species is common to all parts of the state and quite destructive some seasons, causing much of the foliage to be cast prematurely.

25. **Melampsora populina,** (Jacq.) Lev. II, III.
1847: Ann. Sci. Nat. VIII, p. 375.
On Populus monilifera, Kingman county, Oct. 1889, W. A. Kellerman; Rooks county, Aug. 1891, Aug. 1896, Mch. 1892, and Feb. 1896; Manhattan, Sept. 1893, M. A. Carleton.
On Populus dilatata, Rooks county, Sept. 1896.
This rust, which is common in all parts of the state during September and October, often proves quite destructive to young trees on low land, in many cases completely denuding and killing them outright.

26. **Melampsora lini,** (DC.) Tul.
Ann. Sci. Nat. Ser. 4, II, p. 93.

On Linum rigidum, Ford county, summer of 1892, A. S. Hitchcock.

A rare and inconspicuous species, found at no other time or place in the state so far as known.

PUCCINIA, Pers.

27. **Puccinia agropyri,** E. & E. II, III.
1891: Jour. Mycol. VII, p. 131.

On Agropyrum glaucum, Rooks county, Sept. 1895.

This is a well marked but very rare and inconspicuous species, doing little or no harm to its host. The subangular form of the teleutospores separates it readily from other species on gramineal hosts.

28. **Puccinia amphigena,** Diet. III.
1895: Hedwigia, p. 291.

On Calamagrostis longifolia, Rooks county, Feb. 1893 (part of type), also Mch. 1897; Manhattan, Sept. 1892, C. H. Thompson; Dec. 1893, M. A. Carleton.

The Manhattan specimens were labeled in the college herbarium as Puccinia graminis, Pers. It may usually be determined in the gross form with little difficulty by its persistently amphigenous teleutosori, even in the closely bound sheaths.

29. **Puccinia andropogonis,** Schw. II, III.
1834: Syn. N. Am. Fungi, p. 295.

On Andropogon provincialis, Rooks county, Sept. 1892 and Mar. 1897; Manhattan, Sept. 1893, M. A. Carleton; Franklin county, Dec. 1893, Grace Meeker; Reno county, Oct. 1889, Kellerman and Swingle.

On Andropogon scoparius, Rooks county, Jan. 1893, Dec. 1895, and Sept. 1897, II; Manhattan, Mar. 1891, C. H. Thompson; Sept. 1887, Kellerman and Swingle; Franklin county, Dec. 1893, Grace Meeker.

This rust, which is common every year and probably found in every county in the state, is not very destructive to its hosts.

30. **Puccinia anemones-virginianæ,** Schw. III.
1822: Syn. Fung. Carol. No. 486.

On Anemone virginiana, Manhattan, July 1892, C. H. Thompson.

On Anemone nemorosa, Manhattan, June 1887, Kellerman and Swingle. Puccinia solida, Schw., and P. compacta, DeBy., are synonyms of this species.

31. **Puccinia angustata,** Peck, III.
XXX Rept. State Bot. N. Y. p. 125.

On Scirpus atrovirens, Rooks county, April 1890 and Sept. 1896; Manhattan, July and Sept. 1892, M. A. Carleton.

Rare and not destructive.

32. **Puccinia asteris,** Duby, III.
1830: Bot. Gall. II, p. 888.

On Aster multiflorus, Rooks county, Sept. 1887; Manhattan, July 1887, Kellerman and Swingle.

On Aster salicifolius, Rooks county, June 1889 and Oct. 1894.

On Aster drummondii, Manhattan, Aug. 1892, C. H. Thompson; Aug. 1893, M. A. Carleton.

On Aster paniculatus, Manhattan, Oct. 1889, Kellerman and Swingle; June 1892, C. H. Thompson.

A common and widely distributed species, but not very destructive.

33. Puccinia bartholomæi, Diet. II, III.

1892: Hedwigia, p. 290.

On leaves, sheaths and culms of Bouteloua oligostachya, Rooks county, Mar. 1892—type. Also collected Oct. 1892, Aug. 1895, and Dec. 1895.

On leaves of Bouteloua racemosa, Mar. 1893 and July 1894.

This species has been repeatedly mistaken for Puccinia vexans, Farl., by various collectors, but it differs much from that, especially in the smaller size of the teleutospores and the absence of the large number of one-celled spores usually found in that species. Not very common, yet frequently found in favorable situations, especially about cultivated ground, covering large tufts of the grass, particularly of the first-named host, on every leaf, sheath, and culm.

(NOTE.—Doctor Dietel's specific, "Bartholomewii," does not make a proper Latin terminal for this word; hence the change to "Bartholomæi.")

34. Puccinia caricis, (Schum.) Reb. II, III.

1803: Flora Saell. p. 233.

On Carex stricta, Rooks county, Oct. 1892 and Oct. 1896.

On C. sparganioides, Mch. 1892.

Cn Carex vulpinoidea, Emporia, Oct. 1892, Carleton.

On Carex straminea, Manhattan, Dec. 1890, Thompson.

On Carex muhlenbergii, Manhattan, July 1892, Thompson.

On Carex sp., Cloud county, April 1888, M. A. Carleton.

Common in all parts of the state, on various species of Carex.

35. Puccinia chloridis, Diet. III.

1892: Hedwigia, p. 289.

On Chloris verticillata, Rooks county, Mar. 1892—type; Manhattan, Dec. 1893, M. A. Carleton.

A rare species, of infrequent occurrence.

36. Puccinia circææ, Pers.

1797: Disp. Meth. Fung. p 39.

On Circæa lutetiana, St. George, Pottawatomie county, Aug. 1893, J. B. S. Norton.

37. Puccinia clavispora, Ell. & Barth. II, III.

1896: Erythea, IV, p. 79.

On Andropogon nutans, Phillips county, Aug. 1895—type; Rooks county, Sept. 1896, and Sept. 1897.

This is a well-defined species, rather rare, but quite destructive to its host in favorable situations. Doctor Underwood reports it from Alabama on the same host, and Prof. B. M. Duggar reports it on Andropogon tener from the same state.

38. Puccinia convolvuli, (Pers.) Cast. II, III.

Obs. I, p. 16.

On Convolvulus sepium, Rooks county, Sept. 1887 and Sept. 1897; Manhattan, July 1892, C. H. Thompson; Mitchell county, Oct. 1887, Cloud county, June 1888, and Shawnee county, Aug. 1892, M. A. Carleton.

Not common nor very destructive.

39. Puccinia cryptandri, Ell. & Barth. II, III.

1897: Erythea, V, p. 47.

On Sporobolus cryptandrus, Rooks county, Sept. 1896—type, Oct. 1897.

This species, which was formerly confounded with Puccinia sporoboli, Arth., on S. heterolepis, differs much from that, especially in the prominent gross character of the brown uredosori, which almost completely cover the upper sides of the leaves. The uredo of this species is very common in many counties of western Kansas from July to October, but the III is of very rare occurrence. See also Arth. & Holw. Uredineæ Exsiccatæ et Icones, No. 24.

40. **Puccinia cyperi,** Arth. II, III.
1891: Bot. Gazette, p. 226.
On Cyperus strigosus, Rooks county, July 1894; Manhattan, Sept. 1893, M. A. Carleton.
On Cyperus filiculmis, Manhattan, July 1892, C. H. Thompson.
On Cyperus speciosus, Manhattan, July 1892, M. A. Carleton.
On Cyperus schweinitzii, Manhattan, Aug. 1892, M. A. Carleton.
On Cyperus strigosus, Topeka, July, 1892, Carleton.
Not very common, but yet quite destructive to some of its hosts in favorable seasons.

41. **Puccinia dochmia,** B. & C. III.
North Pacific Expl. Expedition, No. 131.
On Muhlenbergia glomerata, Rooks county, Oct. 1892 and Dec. 1896; Osborne county, Dec. 1890, Benj. Brown.
On Muhlenbergia mexicana, Rooks county, Oct. 1892 and Sept. 1895; Manhattan, Aug. 1891, C. H. Thompson.
This species is probably common in all parts of the state where these hosts are found. One the latter-named host the fungus attack is of such character as to often affect the plants to such an extent that the panicle becomes abortive and fails to make its appearance.

42. **Puccinia eleocharidis,** Arth. III.
1884: Bull. Iowa Agr. Coll. p. 156.
On Eleocharis palustris, St. George, Pottawatomie county, Aug. 1893, and on Eleocharis sp., Manhattan, Nov. 1892, M. A. Carleton.
A rare and inconspicuous species.

43. **Puccinia emaculata,** Schw. III.
1834: Syn. N. Am. Fungi, p. 295.
On Panicum capillare, Rooks county, Feb. 1892 and Oct. 1896; Manhattan, Oct. 1887, Kellerman and Swingle; Sedgwick and Osage counties, Oct. 1889, Kellerman and Swingle.
On Triodia cupræa, Manhattan, Oct. 1892, Carleton.
Not very common and not destructive.

44. **Puccinia flaccida,** B. & Br. II, III.
1873: Jour. Linn. Soc. Bot. XIV, p. 91.
On Panicum crus-galli, Rooks county, Sept. 1892, Sept. 1895, and Sept. 1896.
A rather rare species, but usually very noticeable and abundant when it occurs, rendering the upper surface of the broad green leaves a rich brown by the profuse discharge of the uredospores. The III is very rare.

45. **Puccinia galiorum,** Lk. III.
1825: Linn. Sp. Plant. II, p. 76.
On Galium aparine, Manhattan, June 1886, W. A. Kellerman.

46. **Puccinia grindeliæ,** Peck, III.
1879: Bot. Gazette, p. 127.
On Grindelia squarrosa, Rooks county, June 1889 and Aug. 1894; Seward county, Oct. 1892, M. A. Carleton; Sheridan county, June 1892, A. S. Hitchcock; Trego county, June 1885, W. A. Kellerman.

47. **Puccinia helianthi,** Schw. II, III.
1822: Syn. Fung. Carol. p. 73.
On Helianthus annuus, Rooks county, Aug. 1894, II, Sept. 1893, III; Manhattan, Aug. 1892, Carleton, Aug. 1883, Kellerman; Fort Scott, May, 1887, II, Carleton; Osborne county, Sept. 1890, Benj. Brown.
On Helianthus hirsutus, Manhattan, Oct. 1893, M. A. Carleton.
On Helianthus grosse-serratus, Manhattan, Aug. 1892, M. A. Carleton.
On Helianthus maximiliani, Rooks county, Oct. 1892, III, Aug. 1894, II; Manhattan, Oct. 1892, J. B. S. Norton.
On Helianthus doronicoides, Rooks county, Oct. 1892, III; Manhattan, Sept. 1891, C. H. Thompson.
On Helianthus petiolaris, Rooks county, Aug. 1894, II, Sept. 1893, III; Greeley county, summer of 1892, Minnie Reed; Manhattan, Aug, 1892, and Seward county, Oct. 1892, M. A. Carleton.
On Helianthus rigidus, Manhattan, Sept. 1891, C. H. Thompson.
On Helianthus tuberosus, Manhattan, July 1892, Geo. L. Clothier.
This is one of our most common and widely distributed rusts, occurring abundantly every year. The large Russian sunflower in cultivation is often completely killed by the uredo stage, which not only attacks the leaves but also the stems, petioles and bracts of the involucre. Its attacks, however, on the wild species of western Kansas are never sufficiently severe to prevent the ripening of a full crop of seed.

48. **Puccinia heterospora,** B. & C. III.
1869: Jour. Linn. Soc. X, p. 356.
On Abutilon avicennæ, Manhattan, Sept. 1890, Topeka, Sept. 1892, M. A. Carleton; Pottawatomie county, Oct. 1890 and Oct. 1893, Barth.
On Malva sylvestris, Pottawatomie county, Oct. 1890, Barth.

49. **Puccinia hieracii,** (Schum.) Mart. II, III.
1803: Flora Saell. II, p. 232.
On Pyrrhopappus scaposus, Rooks county, II, June 1898, III; Osborne county, June 10, 1891, Benj. Brown.
On Troximon cuspidatum, Rooks county, June 1888, II, III; Gove county, June 1885, W. A. Kellerman.
On Taraxacum officinale, Manhattan, July 1892, M. A. Carleton.
In my examination of the material comprising the several specimens of this species, I have classed Puccinia flosculosorum (A. & S.) Roehl., P. troximontis, Ph., and P. variabilis as mere synonyms, believing that there is not sufficient specific difference to warrant their separation.

50. **Puccinia kansensis,** Ell. & Barth. II, III.
1896: Erythea, IV, p. 1.
On Buchloe dactyloides, Rooks county, Sept. 1894—type; Aug. and Sept. 1895.
This species, which was very rare during 1894, the type year, was very abundant during Aug. and Sept. 1895 and 1896, but did not make its

appearance at all in 1897 and 1898. In the seasons favorable to its production it was quite destructive in places, covering large patches of the wool-like host brown with the loosely discharged uredospores.

51. **Puccinia kuhniæ**, Schw. III.
1834: Syn. N. Am. Fungi, p. 296.
On Kuhnia eupatorioides gracilis, Rooks county, Oct. 1896. Excellent specimens on one good plant.
This fine species has not been reported elsewhere in the state.

52. **Puccinia lateripes**, Berk. & Rav. I, II, III.
Grevillea, III, p. 52.
On Ruellia ciliosa, Manhattan, July 1884, Kellerman; July 1892, Thompson; June, Aug. and Sept. 1893, Carleton.
On Ruellia strepens, Pottawatomie county, Oct. 1892, Hitchcock.

53. **Puccinia lithospermi**, Ell. & Kell. III.
Jour. Mycol. I, p. 2, 1885.
On Evolvulus argenteus, (Manhattan, type locality. Original specimens not in college herbarium); Hamilton county, July 1893, C. H. Thompson.
A very rare species, observed but few times.

54. **Puccinia lobeliæ**, Gerard.
1773: Bull. Buffalo Soc. Nat. Sci. I, p. 68.
On Lobelia syphilitica, Manhattan, Aug. 1887, Kellerman and Swingle; Doniphan county, Aug. 15, 1888, O. E. Olin.
Syn.: *Puccinia microsperma*, B. & C.
Rare and inconspicuous, doing small damage to its host plant.

55. **Puccinia ludibunda**, E. & E. II, III.
1893: Proc. Phil. Acad. Nat. Sci. p. 153.
On Carex sparganioides, Rooks county, Oct. 1892—type, III; Aug. 1894, II.
This species, while not very common, is yet usually separated with little difficulty, in its gross form, from P. caricis, (Schum.), on the same host by the general character and prominence of the teleutosori.

56. **Puccinia lygodesmiæ**, E. & E. III.
1893: Proc. Phil. Acad. Nat. Sci. p. 154.
On Lygodesmia juncea, Rooks county, Oct. 1892 and Oct. 1894; Greeley county, July 1892, Minnie Reed; Grant and Hamilton counties, June 1893, C. H. Thompson; Saline county, July 1892. M. A. Carleton.
Not very common, though quite noticeable when it occurs on account of the black tumid sori which surround the stems and smaller branches. Widely distributed throughout the great plains region.

57. **Puccinia menthæ**, Pers. II, III.
1801: Syn. Meth. Fung. p. 227.
On Mentha canadensis, Manhattan, Sept. 1892, C. H. Thompson.
On Monarda fistulosa, Manhattan, May 1884, II, Nov. 1883, Kellerman; Emporia, Oct. 1893, Pottawatomie county, Sept. 1892, Mitchell county, Oct. 1887, Carleton.
Common where these two hosts are found, though not very destructive.

58. **Puccinia montanensis**, Ell. II, III.
1891: Jour. Mycol. VII, p. 274.
On Elymus canadensis, Rooks county, Aug. 10, 1892, II, Aug. 27, 1894, III; Manhattan, June 1891, C. H. Thompson.

On Elymus virginicus, Manhattan, July 1891, C. H. Thompson.

This species in its gross characteristics much resembles Puccinia rubigovera (DC.); rare and inconspicuous, doing little damage to its host.

59. **Puccinia nigrescens,** Peck, II, III.

1878: Bot. Gazette, p. 35.

On Salvia azurea grandiflora, Rooks county, Sept. 1887; Manhattan, Sept. 1888, Kellerman and Swingle; June 1891, II, Thompson.

On Salvia lanceolata, Rooks county, Sept. 1887 and Oct. 1896; Manhattan, Oct. 1883, W. A. Kellerman; June 1889, Kellerman and Swingle.

Locally this is a truly intermittent species, as it may prevail in great abundance one season and not make its appearance again in the same community for five or more years.

60. **Puccinia obtecta,** Peck, II, III.

1885: Parasitic Fungi of Illinois, p. 196.

On Scirpus lacustris, Manhattan, Oct. 1893, M. A. Carleton (Ured Am. No. 14); Wamego, Pottawatomie county, Oct. 1893, Barth.

On Scirpus pungens, Manhattan, March 1893, Carleton.

This interesting and well-defined species is of rare occurrence and does little harm to its hosts.

61. **Puccinia panici,** Diet. II, III.

1895: Erythea, Vol. III, p. 80.

On Panicum virgatum, Rooks county, Sept. 1892 and Sept. 1893; Phillips county, Sept. 1895; Pawnee county, Oct. 1887, Kellerman and Swingle; Manhattan, Sept. 1892, C. H. Thompson; Stafford county, Oct. 1892, M. A. Carleton.

This species, which has been recently separated from P. emaculata, Schw. by Doctor Dietel, is quite common on this host in many parts of the state, and is often associated on the same leaves with Uromyces graminicola, Burrill.

62. **Puccinia phragmitis,** (Schum.) Körn. II, III.

1876: Hedwigia, p. 179.

On Phragmites communis, Hamilton county, Oct. 1892, M. A. Carleton.

On Spartina cynosuroides, Rooks county, Aug. and Nov. 1895, also Aug. 1897; Pottawatomie and Clay counties, Oct. 1893, Barth.; Manhattan, Mar. 1888, Kellerman and Swingle; Sedgwick county, Mar. 1888, M. A. Carleton; McPherson county, July 1892, A. S. Hitchcock; Johnson county, Aug. 1892, M. A. Carleton.

This species is one of our most noticeable grass rusts. On Spartina in many cases it covers the sheaths and leaves in the III with a nearly solid coat of black.

Syn.: *Puccinia sparganioides*, Ell. & Barth., Erythea, IV, p. 2, on leaves of Carex sparganioides, will have to be abandoned, as careful examinations show it to be P. phragmitis on short, sedge-like leaves of Spartina cynosuroides. Issued erroneously in N. A. F. 3475 and Fungi Col. 1072.

63. **Puccinia physalidis,** Pk. I.

1879: Bot. Gazette, p. 218.

On Physalis lanceolata, Rooks county, June 1891; Cloud county, June 1895, M. A. Carleton; Osborne county, June 1894, C. L. Shear; Manhattan, July 1893, J. B. S. Norton; Saline county, May 1893, A. W. Jones.

On Physalis comata, Ellis county, June 1894, Barth.

Not very common, yet destroying almost completely every plant attacked.

Most probably perennial; II and III not found.

Syn.: *Æcidium solani*, Mont.

64. Puccinia poculiformis, (Jacq.) Wett. II, III.

1885: Verh. Zool.-Bot. Ges. Wien, p. 544.

Syn.: *Puccinia graminis*, Pers., and *P. jubata*, E. & B.

On Agropyrum glaucum, Rooks county, Oct. 1892.

On Elymus canadensis, Aug. 1892 and Aug. 1898.

On Eatonia obtusata, Aug. 1898, II, III.

On Festuca tenella, June 1898, II.

On Avena sativa, Sept. 1894, II, Jan. 1892, III; Woodson county, July 1891, J. G. McCormick.

On Bromus secalinus, Manhattan, July 1892, C. H. Thompson.

On Bromus pratensis, Manhattan, Nov. 1892, Carleton.

On Agrostis alba vulgaris, Manhattan, Oct. 1892, Thompson.

On Hordeum vulgare, Manhattan, July 1891, Thompson; Ford county, summer of 1892, A. S. Hitchcock.

On Hordeum jubatum (*Puccinia jubata*, E. & B.), Phillips county, Mch. 1895; Rooks county, Aug. 1898; Manhattan, Aug. 1892, C. H. Thompson; Stafford county, Dec. 1892, M. A. Carleton.

On Triticum vulgare, Rooks county, June 1892, II, Jan. 1892, III; Manhattan, July, 1893, II and III, M. A. Carleton.

This species, the "black rust" of the cereals, is unquestionably the most universal one in the whole list, and is found in all parts of the world. Its list of hosts is also greater in number than that of any other species in the state. Its destructive qualities in the grain fields are too well known to need further comment here. I have no knowledge of the æcidial stage ever having been collected on cultivated Berberis in the state. The genus is not indigenous to Kansas.

NOTE.—It has been with some qualms of conscience that I have discarded the time-honored name of Puccinia graminis, Pers., for this species and adopted the one here given. The evolution in nomenclature, however, which is constantly bringing order out of chaos, forces upon us the necessity of giving preference to priority where subsequent names are positively known to be mere synonyms. See Arth. & Holw. Ured. Ex. et Icones No. 30.

65. Puccinia polygoni-amphibii, Pers. II, III.

1801: Disp. Meth. Fung. p. 227.

On Polygonum muhlenbergii, Rooks county, Sept. 1895; Manhattan, Nov. 1883, Kellerman, Aug. 1891, C. H. Thompson; Emporia, Oct. 1893, M. A. Carleton.

Specimens in the state herbarium at Manhattan labeled P. amphibii, Fckl., P. polygoni, Pers., and P. polygonorum, Lk., and those in my own herbarium labeled the same, are all included in this species.

66. Puccinia pruni, Pers. II, III.

1801: Syn. Meth. Fung. p. 226.

On Prunus americana, Rooks county, Oct. 1892 and Sept. 1896; Manhattan, Sept. 1893, Carleton.

On Prunus watsoni (sand plum), Rooks county, Aug. 1894.

On Prunus pumila (sand cherry), Rooks county, Sept. 1892, Sept. 1896, and Sept. 1897.

Common and widely distributed, doing considerable damage some seasons.

67. Puccinia redfieldiæ, Tracy, III.

1891: Jour. Mycol. VII, p. 281.

On Redfieldia flexuosa, Garden City, July 1889—type, Dr. Geo. Vasey.

This species is very rare and has only been collected once. It was discovered by Professor Tracy on herbarium specimens of the host distributed by the Division of Botany of the U. S. Department of Agriculture.

68. Puccinia rhamni, (Pers.) Wett. II, III.

1885: Verh. Zool.-Bot. Ges. Wien, p. 545.

On Avena sativa, Manhattan, June 1892, II, July 1892, III, M. A. Carleton; Hamilton county, summer of 1892, A. S. Hitchcock; Woodson county, July 1891, J. W. G. McCormick.

Common on this host, but so far not found in the state on other gramineal hosts.

Syn.: *Puccinia coronata*, Corda.

69. Puccinia rubigo-vera, (DC.) Wint. I, II, III.

Flora Franc. VI, p. 83.

On Onosmodium carolinianum, Rooks county, June 1, 1888, I. Very rare; found only once.

On Triticum vulgare, Rooks county, June 17, 1892, II, June 28, 1892, III.

Also represented in the Manhattan herbarium by specimens collected by various persons in Decatur, Ford, Osborne, Riley, Elk, Sedgwick, Seward and Woodson counties.

On Secale cereale, Rooks county, June 25, 1890, II, III; Manhattan, June 25, 1892, M. A. Carleton.

On Hordeum pusillum, Rooks county, June 1, 1897, II, III.

On Kœleria cristata, Greenwood county, summer of 1892, Hitchcock.

On Eatonia obtusata, Rooks county, June 1898, II, III.

On Elymus striatus, Hamilton county, Nov. 1892, Carleton.

This is the "red rust" of the cereals which is so noticeable in the uredo stage. Like Puccinia poculiformis, it is one of the universal species, being found in all parts of the world, but it is not so destructive in its qualities as that species. The III is inconspicuous as the sori are persistently tectate—covered by the epidermis of the culm, sheath, or leaf.

70. Puccinia saniculæ, Grev. III.

1824: Flora Edin. p. 431.

On Sanicula canadensis, Manhattan, Aug. 1892, C. H. Thompson.

On Sanicula marylandica, Pottawatomie county, Aug. 17, 1893, Norton and Dorman.

Rare and not destructive.

71. Puccinia schedonnardi, Kell. & Sw. II, III.

1888: Jour. Mycol. IV, p. 95.

On Schedonnardus texanus, Manhattan, Mar. 1889 (Kell. & Swing., Kan. Fungi, No. 16); Phillips county, Sept. 1895; Rooks county, Dec. 1895 and June 1896.

Rare and inconspicuous. Must be looked for diligently to be seen at all.

72. Puccinia seymeriæ, Burrill.

1884: Bot. Gazette, p. 189.

On Seymeria macrophylla, Manhattan (no date), Kellerman and Swingle.

The single piece of a leaf in the college herbarium labeled as this species contains no fungus whatever! The presumption is that the species has been collected in the state; hence its place in this catalogue.

73. **Puccinia sherardiana,** Körn. III.

1877: Hedwigia, p. 29.

On Malvastrum coccineum, Rooks county, Sept. 1889 and Aug. 1895; Cloud county, July 1887, Carleton; Ford county, June 1888, Kellerman and Swingle; Mitchell county, July 1888, Carleton; Republic county, July 1888, Kellerman; Osborne county, June 1891, Benj. Brown; Seward county, Oct. 1892, Carleton; Hamilton county, Aug. 1884, Kellerman; Greeley county, Aug. 1892, Minnie Reed.

Very common throughout the west half of the state, and quite destructive to its host in favorable seasons for its development. As Puccinia malvastri, Peck, is only a synonym, on the best authority, all specimens labeled thus have been included in this species. My examinations show no specific difference.

74. **Puccinia silphii,** Schw. III.

1834: Syn. N. Am. Fungi, p. 296.

On Silphium integrifolium, Rooks county, June 1892 and July 1894; Manhattan, May 1889, Kellerman and Swingle (Kansas Fungi, No. 45); also, June 1892, M. A. Carleton (Ured. Am. No. 41); Cloud county, July 1888, Carleton.

On Silphium laciniatum, Manhattan, July 1884, W. A. Kellerman; Osborne county, June 10, 1891, Benj. Brown.

Common in many parts of the state and quite destructive to the first-named host when the stems are attacked, killing many of the most vigorous plants.

75. **Puccinia smilacis,** Schw. III.

1822: Syn. Fung. Carol. p. 72.

On Smilax hispida, Manhattan, Nov. 1894 and Oct. 1895, M. A. Carleton.

Of rare occurrence and not noticeably destructive.

76. **Puccinia sorghi,** Schw. II, III.

1834: Syn. N. Am. Fungi, p. 295.

On leaves of Zea Mays, Rooks county, Sept. 1892 and Sept. 1895; Manhattan, Aug. 1891, C. H. Thompson; Butler county, July 1892, A. S. Hitchcock.

This is another of our universal rusts, being found in all parts of the United States. It affects, however, very slightly the vigor of its host.

77. **Puccinia suaveolens,** (Pers.) Wint. II, III.

Obs. II, p. 24.

On Cnicus undulatus, Rooks county, June 1892, II, June 1898, III; Osborne county, June 1891, Benj. Brown; Manhattan, July 1891, C. H. Thompson; Seward county, summer of 1892, A. S. Hitchcock.

Rare and not easily noticed, being mostly hypophyllous. The yellowish discoloration on the upper side of the leaves usually indicates its presence.

78. **Puccinia subnitens,** Dietel, III.

1895: Erythea, III, p. 81.

On Distichlis spicata, Saline river, Ellis county, Sept. 9, 1895, Barth.

Rare; found only once in the state. Abundant and quite destructive in the locality indicated above.

79. **Puccinia substriata,** Ell. & Barth. II, III.

1897: Erythea, V, p. 47.

On Paspalum setaceum, Rooks county, Aug. 20, 1896, mostly II—type; Sept. 29, III.

Abundant in one locality, but nevertheless a rare species. It did not occur in the same place in 1897 and 1898. Quite destructive.

80. **Puccinia sydowiana**, Dietel, II, III.

1897: Hedwigia, XXXVI, p. 299.

On Sporobolus asper, Rooks county, Nov. 1892, Feb. 1893, and Mar. 1895 III, July 1896 and Aug. 1898, II; Manhattan, Dec. 1892, A. S. Hitchcock; Franklin county, Dec. 1893, Grace Meeker.

This species is very common and profusely abundant on the host. Some seasons it is quite destructive, rendering abortive many plants. It was issued in N. A. F. 2887, and in Fungi Col. 48, as Puccinia sporoboli, Arth., from which it differs in many ways. Its first appearance under the present name was in Syd. Ured. No. 1032, the material of which was submitted to Doctor Dietel, who separated it from P. Sporoboli, Arth., and gave it specific distinction. In Arth. & Holw. Ured. Ex. et Icones No. 26, the question is discussed at some length, and a new nomenclature—P. vilfæ, Arth. & Holw.—has been adopted, which, for the purposes of this catalogue, it has been thought best not to follow.

81. **Puccinia tanaceti**, DC. II, III.

Flor. Fran. II, p. 222.

On Artemisia ludoviciana, Manhattan, Sept. 1884, W. A. Kellerman.

On Artemisia filifolia, Seward county, Oct. 1892, M. A. Carleton.

This fungus, which is so common in the Rocky Mountain states on many species of Artemisia, is very rare in western Kansas.

82. **Puccinia tanaceti**, DC., var. **actinellæ**, Web. III.

1890: Flora of Nebraska, p. 66.

On Actinella scaposa, Osborne county, June 10, 1890, Benj. Brown; Decatur county, summer of 1892, A. S. Hitchcock; Rooks county, May 27, 1898.

This variety, which Professor Webber reports so abundant and destructive in western Nebraska, is very rare here, although the host is very common. Actinella scaposa (Kansas), and Actinella acaulis (Nebraska), I feel quite sure stand for the same plant.

83. **Puccinia tecta**, Ell. & Barth. II, III.

1896: Erythea, IV, p. 79.

On Carex sparganioides, Rooks county, Oct. 7, 1895—type.

A rare species, found only once. Abundant in that locality. I quote the following note from the original description: "Approaches Puccinia angustata, Peck, but differs from that in its paraphysate uredosori and in its persistently tectate teleutosori."

84. **Puccinia triodiæ**, Ell. & Barth. II, III.

1896: Erythea, IV, p. 3.

On Triodia purpurea, Rooks county, Aug. 1895—type; also Aug. 20, 1896.

Abundant in one place, but not very destructive. On this species I also quote from the original description: "Pedicels stout, persistent, sometimes oblique; . . . closely allied to Puccinia windsoriæ, Schw., but that has teleutospores distinctly obovate and pedicels much shorter."

85. **Puccinia variolans**, Hark. III.

1884: Bull. Calif. Acad. Sci. p. 15.

On Aplopappus spinulosus, Rooks county, June 15, 1889.

On Aplopappus rubiginosus, Hamilton county, Oct. 11, 1892, M. A. Carleton.

Rare and usually not destructive. This species has been labeled by various collectors, and distributed not only under the name here given but also under those of P. grindeliæ, Peck, and P. tanaceti, DC. (Fungi Col. No. 754). It seems the most appropriate, however, that the form on Aplopappus should be referred to P. variolans, and on the authority of Prof. J. C. Arthur it is thus given.

86. Puccinia vernoniæ, Schw. II, III.
1834: Syn. N. Am. Fungi, No. 2926.

On Vernonia baldwinii, Rooks county, Sept. 1893, III, July 1894, II; Manhattan, July 1883, W. A. Kellerman, Sept. 1891, C. H. Thompson; Sedgwick county, Oct. 1891, M. A. Carleton; Barber county, summer of 1892, Hitchcock; Saline county, July 1893, M. A. Carleton.

Common in many parts of the state and sometimes quite destructive to its host. After a careful consideration of the matter from the abundant material at hand, I have decided to discard Professor Burrill's varietal form (P. tanaceti, DC., var. vernoniae, [Schw.]), and restore the form on Vernonia to its former specific position. See also N. A. F. No. 3050 and Fungi Col. Nos. 263 and 353.

87. Puccinia vexans, Farl. II, III.
1883: Proc. Am. Acad. Arts & Sci. p. 82.

On Bouteloua racemosa, Rooks county, Jan. 1893 and Oct. 1896; Manhattan, Aug. 1892, C. H. Thompson; Pottawatomie county, Nov. 1893, M. A. Carleton.

Common but not destructive. In its microscopic characters this species is peculiarly interesting on account of the wide divergence in the teleutospores, which range from the aculeate, thick, short-stalked unicelled form to that of the typical long-pediceled uniseptate spores.

88. Puccinia violæ, (Schüm.) DC. I, II, III.
1803: Flor. Saell. II, p. 224.

On Viola cucullata, Rooks county, May 1888 and June 1894, I; Manhattan, May 1886, I, July 1886, II, III, W. A. Kellerman; Cloud county, April 1888, Chase county, May 1888, and Douglas county, May 1892, I, M. A. Carleton.

On Viola delphinifolia, Manhattan, May 1888, Kellerman.

On Viola pedatifida, Manhattan, June 1893, I, Douglas county, May 1892, M. A. Carleton; Sedgwick county, May 1892, A. S. Miller.

On Viola tricolor (cult. pansy), Manhattan, May 1893, E. A. Popenoe.

On Viola nuttallii, Rooks county, June 1888, I.

This species is common every year, especially in I (Æcidium Violæ, Schum.), which is often quite destructive. The II and III are very rare. I have never found either of these in the west half of the state, where the first stage is very abundant.

89. Puccinia virgata, E. & E. III.
1893: Proc. Phil. Acad. Nat. Sci. p. 154.

On Panicum virgatum, Rooks county, Jan. 23, 1892—type (N. A. F. No. 2888); Pawnee county, Oct. 1889, Kellerman and Swingle.

This rare and interesting species is peculiar from the fact, which is not noted in the original description, that the teleutospores are so nearly sessile that they may be said to be non-pedicellate! The Rooks county specimens were found in abundance on one solitary tuft of grass about two feet across. It has not been found anywhere else since. The Pawnee county material, which is of prior collection, I found in the agricultural college herbarium labeled P. emaculata, Schw.

90. **Puccinia xanthii**, Schw. III.
1882: Syn. Fung. Carol. p. 73.

On Xanthium canadense, Rooks county, Aug. 1892 and Aug. 1894; Wallace county, June 1885, W. A. Kellerman; Sedgwick county, Sept. 1888, Carleton; Manhattan, Aug. 1884, W. A. Kellerman; Hamilton county, July 1893, C. H. Thompson.

On Ambrosia trifida, Rooks county, July 1889 and Aug. 1894; Manhattan, July 1891, C. H. Thompson; Wichita, Sept. 1888, M. A. Carleton.

On Ambrosia psilostachya, Rooks county, June 1889 and Aug. 1894; Manhattan, Oct. 1887, Kellerman and Swingle.

On Ambrosia artemisiæfolia, Manhattan, June 1887, Kellerman and Swingle.

This species is very common in all parts of the state on the first-named host, but it is considerably less frequent on the Ambrosias.

91. **Puccinia xanthiifolia**, E. & E. III.
1890: Jour. Mycol. VI, p. 120.

On Iva xanthiifolia, Manhattan, Oct. 1888—type; also, Aug. 1892, C. H. Thompson; Rooks county, Sept. 30, 1895.

A very rare species and not destructive.

UROPYXIS, Schroeter.

92. **Uropyxis amorphæ**, (Curt.) Schroet. II, III.
1875: Hedwigia, p. 165.

On Amorpha canescens, Rooks county, Sept. 3, 1889, III, Aug. 14, 1895, II, III; Mitchell county, Sept. 1887, M. A. Carleton; Manhattan, Aug. 1895, Carleton.

On Amorpha fruticosa, Rooks county, Sept. 3, 1889, II, III, Sept. 24, 1894, III; Manhattan, July 1887, W. T. Swingle; Stafford county, Oct. 1892, Carleton (in Ured. Am. No. 13).

Common and widely distributed. Somewhat destructive at times on the last-named host.

93. **Uropyxis petalostemonis**, (Farl.) De Toni, I, II, III.
1886: Trans. Wis. Acad. Sci. p. 25.

On Petalostemon candidus, Rooks county, July 1895, III; Manhattan, July 1892 and June 1893, Carleton and Clothier (Ured. Am. No. 8, II, III).

On Petalostemon multiflorus, Manhattan, July 22, 1866, III, W. A. Kellerman.

On Petalostemon violaceus, Rooks county, May 27, 1889, II; Manhattan, May 31, 1886, I, July 5, 1885, II, W. A. Kellerman; June 6, 1887, I, II, W. A. Carleton.

Not very common, yet quite destructive to each plant attacked.

GYMNOSPORANGIUM, Hedw.

94. **Gymnosporangium globosum**, Farl. III.
1880: Gymnos. of the U. S. p. 18.

On red cedar (Juniperus Virginiana), Manhattan, May 8, 1893, M. A. Carleton.

Rare. I have only one record of its collection in the state.

95. **Gymnosporangium macropus,** Lk. III.
Spec. Plant. II, p. 27.
On red cedar (Juniperus Virginiana), Manhattan, April 10, 1891, C. H. Thompson; Osborne county, June 10, 1897, Benj. Brown.
Common and disagreeably destructive in many parts of the state.

PHRAGMIDIUM, Link.

96. **Phragmidium speciosum,** Fr. III.
Sum. Veg. Scand. p. 507.
On living stems of Rosa Arkansana, Rooks county, Jan. 1892 and Sept. 1898; Manhattan, Feb. 1889, Kellerman and Swingle; July 1892, C. H. Thompson.
On Rosa setigera, Rooks county, Feb. 17, 1893.
This species, which is quite common in many parts of the state, usually attacks shoots of the present year's growth, killing outright many in the same related group. Even the novice may readily identify it, as it commonly covers the lower part of the stems with a soft, black tomentum, resembling somewhat the black knot on plum twigs.

97. **Phragmidium subcorticium,** (Schrank) Wint. I, II, III.
1793:
On Rosa Arkansana, Rooks county, June 3, 1892, I, Aug. 1, 1894, II, Oct. 5, 1892, III; Cloud county, June 1888, M. A. Carleton; Osborne county, June 1891, Benj. Brown; Manhattan, July and Aug. 1893, II, III, M. A. Carleton (in Ured. Am. No. 15).
On Rosa setigera, Riley county, Sept. 7, 1892, Carleton.
On Rosa, sp. cult., Manhattan, Sept. 3, 1891, C. H. Thompson.
This species is also widely distributed, and is more or less common every year in all three stages, which are readily separated in their gross forms without the aid of the microscope. A fine species, with well-marked characteristics, but usually not destructive with us.

COLEOSPORIUM, Lev.

98. **Coleosporium solidaginis,** (Schw.) Thum.
1822: Syn. Fung. Carol. p. 472.
On Solidago radula, Rooks county, Sept. 15, 1888.
On Solidago serotina, Rooks county, Sept. 6, 1892, and Oct. 1, 1896.
On Solidago canadense, Manhattan, July 13, 1892, M. A. Carleton.
On Solidago lanceolata, Manhattan, Sept. 1893, C. H. Thompson (in Ured. Am. No. 44).
Goldenrod rust is found in all parts of the state in proper situations, when the conditions are favorable, and at times it is quite destructive.

99. **Coleosporium sonchi-arvensis,** (Pers.) Wint.
1801: Syn. Meth. Fung. p. 217.
On Silphium laciniatum, Wilson county, Sept. 22, 1891, T. C. Davis.
On Aster cordifolius, Manhattan, Aug. 5, 1892, C. H. Thompson.
On Aster paniculatus, Manhattan, Aug. 11, 1891, C. H. Thompson.
On Aster salicifolius, Rooks county, Aug. 12, 1898.
On Aster sp., Osborne county, July 1890, Benj. Brown.
Not very common or destructive.
Syn.: Coleosporium compositarum, Lev.

100. Coleosporium vernoniæ, B. & C.
Grev. Vol. III, p. 57.
On Vernonia baldwinia, Manhattan, Aug. 10, 1891, C. H. Thompson; Rooks county, Sept. 2, 1891, and Oct. 2, 1896.
This species, the golden rust of ironweed, is quite common where its host is found on cultivated ground, but it cannot be said to be very destructive.

PUCCINIASTRUM, Otth.

101. Pucciniastrum crotonis (Cke.) De Toni, II, III.
1888: Sacc. Syll. Fung. VII, p. 763.
On Croton monanthogynus, Rooks county, Sept. 7, 1887, and Aug. 20, 1896, II, III; Manhattan, Aug. 1884 and Oct. 1887, W. A. Kellerman.
On Croton texensis, Rooks county, Sept. 4, 1887, and Russell county, Sept. 1895, II, III, Barth.
This species is quite rare and not very destructive to its hosts.

ÆCIDIUM, Pers.

102. Æcidium abundans, Pk.
1878: Bot. Gazette, p. 34.
On Symphoricarpos vulgaris, Manhattan, June 1886, W. A. Kellerman.
Rare; not found in western Kansas.

103. Æcidiums æculi, E. & K.
1884: Bull. Tor. Bot. Club, p. 114.
On leaves of Æsculus arguta, Manhattan, May 6, 1888, Kellerman and Swingle (in Kan. Fungi, No. 1); Pottawatomie county, May 1892, A. S. Hitchcock; Chase county, May 1888, M. A. Carleton; Riley county, May 1885, M. A. Carleton; Rooks county, May 25, 1897.
Rather common where the host is found and sometimes quite destructive. The foliage on several small trees in Rooks county was much damaged in 1897. Type locality, Manhattan.

104. Æcidium alliicolum, Wint.
1885: Hedwigia, p. 260.
On Allium reticulatum, Rooks county, June 4, 1889; Sedgwick county, May 19, 1892, M. A. Carleton. (This specimen is labeled in the agricultural college herbarium Æ. convallariæ, Schum.!)
Very rare; no other records of its occurrence in the state.

105. Æcidium anisotomes, Reich.
1865: Ber. d. Akad. zu Wien, p. —.
On Peucedanum fœniculaceum, Manhattan, May 1892, A. C. Pike, and May 1893, J. B. S. Norton.

106. Æcidium apocyni, Schw.
1822: Syn. Fung. Carol. p. 68.
On Apocynum cannabinum, Manhattan, May and June 1886, W. A. Kellerman.
Rare and not destructive.

107. Æcidium asterum, Schw.
1822: Syn. Fung. Carol. p. 67.
On Aster salicifolius, Rooks county, June 1889.
On Aster sp., Riley county, May 1885, and Chase county, May 1888, M. A. Carleton.

On Solidago canadense, Manhattan, June 1887, Kellerman and Swingle.

On Solidago rigida, Rooks county, June 1888.

On Solidago serotina, Rooks county, June 1888 and July 1894.

Common to many parts of the state, and sometimes quite destructive to the last named host.

108. Æcidium brandegei, Peck.
1878: Bot. Gazette, p. 34.

On Asclepias verticillata pumila, Rooks county, June 21, 1889.

This is a rare and rather inconspicuous species, yet usually destroying each plant attacked.

109. Æcidium caladii, Schw.
1834: Syn. N. Am. Fungi, No. 2860.

On Arisæma dracontium, Manhattan, May 1884, W. A. Kellerman; Chase county, May 1888, M. A. Carleton.

110. Æcidium callirrhoes, E. & K.
1886: Jour. Mycol. II, p. 4.

On Callirrhoe involucrata, Manhattan, May 30, 1889, Kellerman and Swingle (Kan. Fungi, No. 26); Rooks county, June 1891 and June 1898.

Quite common in the western part of the state and sometimes rather destructive. Type locality, Manhattan.

111. Æcidium cassiæ, E. & K.
1887: Ell. & Everh. N. A. Fungi, No. 1825.

On Cassia chamæcrista, Manhattan, May 1889, Kellerman and Swingle. Type locality, Manhattan.

Presumptively rare. I have not seen this species.

112. Æcidium ceanothi, E. & K.
1884: Bull. Torr. Bot. Club, p. 114.

On leaves, petioles and growing shoots of Ceanothus ovatus, Rooks county, June 10, 1889, and May 28, 1898; Manhattan, May 1884, W. A. Kellerman, and May 1889, Kellerman and Swingle.

This species is of rather rare occurrence, but some seasons, such as that of 1898, it is quite destructive. Type locality, Manhattan.

113. Æcidium cephalanthi, E. & K.
1884: Bot. Gazette, p. 191.

On Cephalanthus occidentalis, Pottawatomie county, May 1887, Kellerman and Swingle; Manhattan, May 1886, Kellerman, June 1893, Carleton (Ured. Am. No. 20).

114. Æcidium clematidis, DC.
Flor. Fran. II, p. 243.

On Clematis fremonti, Mitchell county, June 1892, M. A. Carleton.

A very rare species, probably found in the state only once.

115. Æcidium compositarum, Mart.
Flor. Erlang. p. 314.

On Silphium laciniatum, Manhattan, July 5, 1886, W. A. Kellerman.

On Cacalia atriplicifolia, Pottawatomie county, May 1886, M. A. Carleton.

On Eupatorium perfoliatum, Manhattan, May 1887, Carleton.

On Lactuca sp., Douglas county, May 1892, Carleton.

On Helianthus annuus, Rooks county, July 1894.

Probably found in all parts of the state and on many more hosts than those here given. In this form the æcidia clusters are usually very large and few—oftentimes only one—on a leaf. Vide succeeding number.

116. **Æcidium compositarum,** Mart., var. **Helianthi,** Burrill.
1885: Parasitic Fungi of Illinois, p. 232; Sacc. Syll. VII, p. 799.
On Helianthus dororicoides, Rooks county, July 1894 and June 1898.
On Helianthus annuus, Cloud county, April 28, 1888, M. A. Carleton.
On Helianthus sp., Bourbon county, May 1887, M. A. Carleton.
This form is generally rare, yet sometimes quite abundant, though doing but little damage to the host. While the spores are very similar to those of the preceding number, yet the æcidia clusters are so different in structure and occurrence—very small and very many on each leaf—that the varietal form in my judgment should be raised to the distinction of a species, as there appear to be no intermediate forms.

117. **Æcidium daleæ,** Kell. & Sw.
1889: Jour. Mycol. V, p. 13.
On Dalea laxiflora, Rooks county, June 12, 1888—type; also June 1892 and June 1896.
A rather rare species, yet quite destructive at times, distorting all the leaves on each plant attacked.

118. **Æcidium dicentræ,** Trel.
1886: Trans. Wis. Acad. Sci. Arts & Lit. p. 32.
On Corydalis aurea, Manhattan, May 20, 1884, W. A. Kellerman.
On Dicentra cucullaria, Manhattan, May 1888, Kellerman and Swingle (in Kan. Fungi, No. 2).
Rare and not destructive.

119. **Æcidium erigeronatum,** Schw.
1834: Syn. N. Am. Fungi, No. 2869.
On Erigeron annuus, Manhattan, June 1887, M. A. Carleton.
On Erigeron canadense, Manhattan, May 1885; Cloud county, June 1886, and Pottawatomie county, May 1893, M. A. Carleton; Manhattan, June 1890, C. H. Thompson.
On Erigeron strigosus, Rooks county, June 17, 1892; Sherman county, summer of 1892, A. S. Hitchcock; Manhattan, June 1892, M. A. Carleton (in Ured. Am. No. 45).
Not very common, but somewhat destructive.

120. **Æcidium euphorbiæ,** Gmel.
Linn. Syst. Nat. II, p. 1473.
On Euphorbia dentata, Manhattan, May 1887, Carleton; Rooks county, July 1894.
On Euphorbia marginata, Decatur county, summer of 1892, A. S. Hitchcock; Rooks county, June 16, 1888, and June 20, 1898.
On Euphorbia obtusata, Rooks county, June 6, 1888.
On Euphorbia preslii, Rooks county, Aug. 29, 1893.
Widely distributed. Quite common in the western part of the state, and usually quite destructive to the first-named host.

121. **Æcidium fraxini,** Schw.
1822: Syn. Fung. Carol. No. 430.
On Fraxinus pubescens, Clay county, July 1888, Kellerman and Swingle.
On Fraxinus viridis, Rooks county, June 1892, and June 1894; Manhat-

tan, July 1884, Kellerman, June 1892, Carleton (in Ured. Am. No. 33); Clay county, July 1888, Kellerman and Swingle; Republic county, July 1888, W. A. Kellerman; McPherson county, summer of 1892, A. S. Hitchcock; Mitchell county, June 1888, M. A. Carleton.

Widely distributed and periodical in appearance. Quite destructive some seasons, especially to small trees.

122. **Æcidium gaurinum,** Peck.

1879: Bot. Gazette, p. 218.

On Gaura coccinea, Rooks county, June 15, 1891.

A rare species, found only once in the state.

123. **Æcidium geranii,** DC.

Flor. Fran. VI, p. 93.

On Geranium carolinianum, Manhattan, May 1891, C. H. Thompson; St. George, Pottawatomie county, May 1893, Carleton.

124. **Æcidium grossulariæ,** Schum.

1803: Flor. Saell. II, p. 223.

On Ribes aureum, Rooks county, May 13, 1889. Abundant and destructive on this host.

On Ribes gracile, Chase county, May 1888, and Douglas county, May 1889, M. A. Carleton; Manhattan, May 1893, J. B. Dorman.

On Ribes rotundifolium, Manhattan, May 1884, W. A. Kellerman; May 1891, C. H. Thompson.

Neither very common nor very destructive.

125. **Æcidium houstoniatum,** Schw.

1834: Syn. North. Am. Fung. No. 2891.

On Houstonia angustifolia, Rooks county, June 1891; Decatur county, June 1892, Hitchcock; Manhattan, May 1886, M. A. Carleton; Osborne county, June 1894, C. L. Shear.

Not very common, but quite destructive to the individual plants attacked.

The Osborne county material collected by Prof. C. L. Shear was examined by Prof. J. B. Ellis and erected to the position of a new species (Æ. cylindricum, E. & E., Bull. Torr. Bot. Club, 1895, p. 61): but by a careful comparison of this material with the usual form of Æ. Houstoniatum on the same host, I am fully convinced that they are the same, and the fact that the æcidia are a little longer in the proposed new species than usual is not sufficient ground to warrant a specific distinction.

126. **Æcidium impatientis,** Schw.

1822: Syn. Fung. Carol. No. 674.

On Impatiens fulva, Manhattan, May 1887, Kellerman and Swingle; St. George, Pottawatomie county, Aug. 1893, Norton and Dorman.

127. **Æcidium jamesianum,** Peck.

1880: Bot. Gazette, p. 34.

On Asclepius cornuti, Manhattan, June 1892, Thompson.

On Asclepius speciosa, Rooks county, June 1888 and July 1894.

On Asclepius meadii, Rooks county, June 10, 1898.

On Asclepius tuberosa, Rooks county, June 1888 and Aug. 1894.

On Acerates viridiflora, Manhattan, June 1886, and Seward county, June 1888, Kellerman; Rooks county, June 15, 1888.

On Asclepiodora viridis, Manhattan, June 1887, Kellerman and Swingle.

Common, but not very destructive. A fine species. —

128. Æcidium kellermani, De Toni.
1888: Sacc. Syll. Fung. VII, p. 788.
On Baptisia leucophæa, Manhattan, June 11, 1888—type locality.
This species is apparently very rare, as I have no knowledge of its collection in the state during the past ten years.

129. Æcidium liatridis, Ell. & Anderson.
1891: Bot. Gazette, p. 47.
On Liatris scariosa, Manhattan, June 1893, Grace M. Clark.
Apparently very rare in this state.

130. Æcidium lysimachiæ, (Schl.) Wallr.
1833: Flora Crypt. Germ. p. 252.
On Steironema ciliatum, Manhattan, May 1887, Kellerman and Swingle; Lawrence, May 1892, M. A. Carleton.

131. Æcidium macrosporum, Pk.
1873: XXIII Rept. N. Y. State Mus. p. 61.
On Smilax hispida, Manhattan, June 25, 1886, Kellerman.

132. Æcidium oxalidis, Thum.
1876: Flora, p. 425.
On Oxalis stricta, Manhattan, May 1887, M. A. Carleton.
This and the preceding species are seemingly very rare, never having been collected in the state but once.

133. Æcidium pammelii, Trel.
1886: Trans. Wis. Acad. Sci. Arts and Lit. p. 32.
On Euphorbia marginata, Rooks county, June 22, 1891, June 20, 1896, and June 20, 1898; Manhattan, Oct. 1887, and Wallace county, July 1885, W. A. Kellerman.
On Euphorbia sp., Chase county, May 1888, Carleton.
Common, but never abundant. Little damage is done to other than small plants, which sometimes are nearly if not completely destroyed.

134. Æcidium peckii, De Toni.
1888: Sacc. Syll. Fung. VII, p. 790.
On Œnothera biennis, Rooks county, June 14, 1892, and June 16, 1896; Manhattan, May 25, 1885, W. A. Kellerman; Cloud county, April 1888, Sedgwick county, May 1888, and Pottawatomie county, May 1893, M. A. Carleton.
On Œnothera serrulata, Rooks county, June 10, 1891; Manhattan, June 1893, J. M. Westgate.
On Œnothera speciosa, Manhattan, May 1889, Kellerman and Swingle.
On Gaura parviflora, Rooks county, May 25, 1890, and June 1898.
Common in all parts of the state, and some seasons quite destructive, especially on the first-named host.

135. Æcidium pentstemonis, Schw.
1822: Syn. Fung. Carol, p. 68.
On Pentstemon albidus, Rooks county, June 1888 and May 1897.
On Pentstemon acuminatus, Cloud county, May 1888, M. A. Carleton.
On Pentstemon grandiflorus, Manhattan, May 8, 1889, Kellerman and Swingle (Kan. Fungi, No. 28); St. George, Pottawatomie county, May 1893, M. A. Carleton; Rooks county, May 25, 1897.
On Pentstemon cobæa, Cloud county, May 1888, M. A. Carleton.
Common and widely distributed. Sometimes quite destructive to the first-named host.

136. Æcidium polygoni, Chev.
1826: Flor. Paris, I, p. 391.
On Polygonum aviculare, Cloud county, April 1888, M. A. Carleton.
Rare; no other reported in the state.

137. Æcidium porosum, Peck.
1878: Bot. Gazette, p. 34.
On Lathyrus ornatus, Cloud county, May 1887, M. A. Carleton.
On Vicia americana linearis, Rooks county, May 17, 1892, and May 21, 1898; Manhattan, May 1884, W. A. Kellerman; Osborne county, June 1891, Benj. Brown.
Common in favorable seasons, and completely destructive to each plant attacked in the last-named host.

138. Æcidium psoraleæ, Peck.
1885: Bull. Ill. State Lab. Nat. Hist. II, p. 225.
On Psoralea argophylla, Cloud county, June 1888, M. A. Carleton; Sherman county, June 1892, A. S. Hitchcock.
On Psoralea lanceolata, June 6, 1888, and May 24, 1898; Chase county, May 1888, M. A. Carleton.
On Psoralea tenuiflora, Rooks county, June 3, 1891, and May 25, 1895; Manhattan, May 22, 1886, W. A. Kellerman; Chase county, May 1888, and Cloud county, June 1888, M. A. Carleton; Osborne county, June 1891, Benj. Brown; Sedgwick county, May 1887, M. A. Carleton.
This species is common to all parts of the state and is usually fatal to each plant attacked.

139. Æcidium punctatum, Pers.
1801: Syn. Meth. Fung. p. 212.
On Anemone decapetala, Rooks county, June 7, 1892.
A very rare and inconspicuous species.

140. Æcidium pustulatum, Curt.
1873: XXIII Rept. N. Y. State Mus. p. 60.
On Comandra umbellata, Manhattan, May 31, 1886, Kellerman and Swingle (in Kan. Fungi, No. 29); Douglas county, May 1892, M. A. Carleton. Rare and not very destructive.

141. Æcidium sambuci, Schw.
1822: Syn. Fung. Carol. p. 67.
On Sambucus canadensis, Manhattan, May 22, 1886, W. A. Kellerman.
Few collections of this species have been made in the state, indicating its rarity; not destructive.

142. Æcidium smilacis, Schw.
1822: Syn. Fung. Carol. p. 69.
On Smilax hispida, Manhattan, May 30, 1884, W. A. Kellerman.
This species is also rare, with only one record of its collection in the state.

143. Æcidium tuberculatum.
1888: Jour. Mycol. IV, p. 26.
On Callirrhoe involucrata, Rooks county, Sept. 15, 1887—type; also May 20, 1889, and June 10, 1892; Wichita, June 1888, M. A. Carleton; Osborne county, June 1891, Benj. Brown; Decatur county, June 1892, A. S. Hitchcock; Manhattan, May 1893, M. A. Carleton (in Ured. Am. No. 30).

This species is perennial. It occurs on the same individual plant from year to year until the plant is finally vanquished in the unequal strife. Usually every leaf of the plant is attacked to such an extent that such plants never bloom or mature fruit. It is by far the most abundant Æcidium in the west half of the state.

144. Æcidium urticæ, Schum.
1803: Flor. Saell. II, p. 222.
On Urtica gracilis, Manhattan, May 14, 1887, Kellerman and Swingle.
Rare and not destructive.

145. Æcidium verbenicolum, E. & K.
On Verbena stricta, Rooks county, July 1893 and July 1894; Decatur county, June 1892, A. S. Hitchcock; Manhattan, June 1893, Carleton, in Ured. Am. No. 21. (Æ. verbenæ, Speg.)
On Verbena hastata, Rooks county, July 17, 1894.
On Verbena urticæfolia, Manhattan, July 1884, W. A. Kellerman.
Common, and on the first-named host quite destructive some seasons. This species has been somewhat unfortunate in having been made a synonym of Æcidium verbenæ, Speg., and issued as that species by Professor Carleton, as noted above, and also by Ellis and Everhart in Fungi Columbiani, No. 270. Our species and the South American one on Verbena are said, by those who have examined both, to be very distinct; so, at the suggestion of Prof. J. C. Arthur, I have restored our species to its original specific position. Type locality, Manhattan.

146. Æcidium xanthoxyli, Peck.
1881: Bot. Gazette, p. 275.
On Xanthoxylon americanum, Manhattan, June 1884, W. A. Kellerman; also, June 1893, M. A. Carleton (in Ured. Am. No. 60); St. George, Pottawatomie county, Aug. 1893, M. A. Carleton.

RŒSTELIA, Rebent.

147. Rœstelia lacerata, (Sow.) Fr.
1849: Summ. Veg. Scand. p. 510.
On Cratægus coccinea mollis, Manhattan, Aug. 1892, C. H. Thompson.
Rare; only record of collection.

148. Rœstelia pirata, (Schw.) Thaxter.
1834: Syn. North Am. Fungi, No. 2896.
On Pyrus coronaria, Manhattan, Aug. 1889, Kellerman and Swingle; Decatur county, June 1892, A. S. Hitchcock; Lawrence, Aug. 1891, W. C. Stevens; Manhattan, July and Sept. 1892, M. A. Carleton.
On Pyrus ioensis, Manhattan, Aug. 1892, and Johnson county, Aug. 1892, M. A. Carleton; Osborne county, June 1898, Benj. Brown.
On Cratægus coccinea, Manhattan, June 1892, and Johnson county, Aug. 1892, M. A. Carleton.
On Cratægus sanguinea, Manhattan, June 1892, M. A. Carleton.
This and the preceding number, for convenience, have been retained in Rœstelia, but perhaps more properly should have been placed as I in Gymnosporangium, where they rightfully belong.

UREDO, Pers.

149. Uredo agrimoniæ, (DC.) Schroet.
1869: Abh. d. Schles. Ges. Nat.
On Agrimonia eupatoria, Pottawatomie county, Oct. 16, 1893, Barth.

Rather rare, but the bright orange-colored spores which are freely discharged over the under side of the leaves make the fungus very conspicuous.

150. Uredo confluens, Pers.
1801: Syn. Meth. Fung. p. 214.
On leaves of Ribes aureum, Rooks county, Aug. 22, 1892.
This species, which is said to be common in the Rocky Mountain region on several hosts in the Grossulariæ, is rare in Kansas. The following are all presumed to be synonyms, viz.: Cæoma ribis-alpina, Wint.; Cæoma ribesii, Lk.; Cæoma confluens, (Pers.) Schroet.; Uredo jonesii, Peck, and Uredo ribicola C. & E.

151. Uredo gaurina, (Peck.)
1889: Bot. Gazette, p. 218.
On Gaura coccinea, Rooks county, June 15, 1891.
On Gaura villosa, Seward county, Oct. 1892, M. A. Carleton.
Of very rare occurrence and doing small damage to its hosts.

152. Uredo kansensis, Kell. & Sw.
1889: Jour. Mycol. V, p. 77.
On Amorpha fruticosa, Rooks county, July 1885—type, W. A. Kellerman; Manhattan, June 21, 1887, and June 20, 1889, Kellerman and Swingle; Rooks county, June 20, 1888, and July 16, 1894.
Neither common nor destructive.

153. Uredo nitens, (Schw.) De Toni.
1822: Syn. Fung. Carol. No. 458.
On Rubus canadensis, Manhattan, May 1887, Kellerman and Swingle; Lawrence, May 1892, M. A. Carleton.
On Rubus villosus, Manhattan, May 1889, Kellerman and Swingle (in Kansas Fungi, No. 31). Also collected by Carleton, June 1892.
This, the blackberry rust, which is so destructive from the Missouri river eastward, usually does but little damage in Kansas.

154. Uredo quercus, Brond.
In Duby: Botan. Gall. II, 893.
On leaves of Quercus macrocarpa, Manhattan, Oct. 1886, Kellerman and Swingle (in Kansas Fungi, No. 24.)
Apparently very rare, as there is no other record of its collection in the state.

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